


CASE STUDY - Paving

TASK TITLE: Paving

Task Description:	<p>Paving involves the operation of heavy equipment. The paver spends the majority of time in a seated position operating equipment levers (levers operate in a horizontal throw pattern). The duration of the task depends on the paving job assigned that day.</p> <p>Typical jobs in which paving is performed include (not necessarily limited to):</p> <ul style="list-style-type: none">• road repair and maintenance
Job Performance Measures Most Often Impacted by Paving:	<ul style="list-style-type: none">• Integrity of the surface.
Typical Employee Comments about Paving:	<p>Employees typically complain about discomfort and/or stiffness in the hands/wrists/arms and back.</p> <p>The primary areas of concern are the hands/wrists/arms, back/torso and legs/feet.</p> <p>The secondary areas of concern are the shoulders/neck.</p>
Suggested Level II Analysis:	Postural Task Analysis

Shoulder/Neck

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
1. Reaching	<ul style="list-style-type: none"> Task is repetitive and lacks variety 	20. Incorporate rest pauses	✓		low	med	med
	<ul style="list-style-type: none"> Controls are located too far away from employee (see Figure 1.1)  <p>Figure 1.1</p>	87. Provide an appropriate chair/stool <ul style="list-style-type: none"> provide chair with a vibration dampening seat pan, proper lumbar support and the ability move forward 		✓	high	med	med
	<ul style="list-style-type: none"> Lack of arm supports 	112. Provide support for the arms <ul style="list-style-type: none"> provide flexible arm supports or pad contact surface with compressible material. 		✓	med	med	med


Shoulder/Neck (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
2. Arm forces: Repeated contraction of the muscles of the arm or holding/carrying materials	<ul style="list-style-type: none"> Rarely occurs 	N/A					
3. High speed, sudden shoulder movements	<ul style="list-style-type: none"> Rarely occurs 	N/A					
4. Head/neck bent or twisted	<ul style="list-style-type: none"> Windshield is dirty or broken 	18. Improve visual access to work <ul style="list-style-type: none"> replace windshield if broken clean windshield if dirty. 	✓	✓	med low	med med	med med
	<ul style="list-style-type: none"> Absence of sun visor 	108. Provide protection from glare of natural light <ul style="list-style-type: none"> provide sun visor for cab's interior 		✓	med	med	med


Hands/Wrists/Arms

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
5. Bent wrists/ repeated wrist movements or repeated forearm rotation	<ul style="list-style-type: none"> Rarely occurs 	N/A					
6. Repeated manipulations with fingers	<ul style="list-style-type: none"> Rarely occurs 	N/A					
7. Hyperextension of finger/thumb or repeated single finger activation	<ul style="list-style-type: none"> Rarely occurs 	N/A					
8. Hand/grip forces	<ul style="list-style-type: none"> Rarely occurs 	N/A					

Hands/Wrists/Arms (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
9. High speed hand/wrist/arm movements or vibration, impact, or torque to the hand	<ul style="list-style-type: none"> Vibration from the steering wheel is not damped. (see Figure 1.2)  <p style="text-align: center;">Figure 1.2</p>	91. Provide anti-vibration materials <ul style="list-style-type: none"> provide anti-vibration padding for the steering wheel 93. Provide appropriate gloves <ul style="list-style-type: none"> provide anti-vibration gloves 		✓ ✓	med med	med med	med med
10. Exposure to hard edges	<ul style="list-style-type: none"> The window edges and other cab interior surfaces create edges of concentrated stress 	9. Eliminate exposure to hard edges <ul style="list-style-type: none"> pad contact surface with compressible material 	✓		low	med	med
11. Hands and fingers exposed to cold temperatures	<ul style="list-style-type: none"> Work area is too cold or cab interior is cold 	105. Provide portable heaters 93. Provide appropriate gloves	✓	✓	med low	med med	med med

Back/Torso

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
12. Repeated forward or sideways bending movements	<ul style="list-style-type: none"> Seat faces away from work area 	82. Provide adequate work space <ul style="list-style-type: none"> purchase future trucks with swivel seat capability 		✓	high	med	high
13. Twisting of the lower back	<ul style="list-style-type: none"> Rarely occurs 	N/A					
14. High speed, sudden movements	<ul style="list-style-type: none"> Rarely occurs 	N/A					
15. Static, awkward back postures	<ul style="list-style-type: none"> Task lacks variety (see Figure 1.3) 	25. Increase task variety	✓		low	med	med
		20. Incorporate rest pauses	✓		low	med	med
		87. Provide an appropriate chair/stool <ul style="list-style-type: none"> provide chair with a vibration dampening seat pan and proper lumbar support 		✓	high	med	med
	 <p>Figure 1.3</p> <ul style="list-style-type: none"> Inadequate seating 						

Back/Torso (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
16. Lifting forces	<ul style="list-style-type: none"> Rarely occurs 	N/A					
17. Pushing or pulling	<ul style="list-style-type: none"> Rarely occurs 	N/A					
18. Whole body vibration	<ul style="list-style-type: none"> The vibration damping materials are in need of maintenance or seating mounts are inadequate. (see Figure 1.4) 	87. Provide an appropriate chair/stool		✓	high	med	med
		<ul style="list-style-type: none"> provide chair with a vibration dampening seat pan and proper lumbar support. 					
		12. Encourage appropriate clothing	✓		low	low	low
		<ul style="list-style-type: none"> encourage operator to wear loose fitting clothing 					
		20. Incorporate rest pauses	✓		low	med	med



Figure 1.4

Legs/Feet

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
19. Fixed position, standing	<ul style="list-style-type: none"> Rarely occurs 	N/A					
20. Exposure to hard edges on legs, knees, and feet	<ul style="list-style-type: none"> Cab has hard or sharp edges 	9. Eliminate exposure to hard edges <ul style="list-style-type: none"> provide padding for edges 	✓		low	med	med
21. Awkward leg postures	<ul style="list-style-type: none"> Seat is improperly positioned in a small cab 	87. Provide an appropriate chair/stool		✓	med	med	med
		<ul style="list-style-type: none"> provide height adjustable chair with a vibration dampening seat pan and proper lumbar support adjust seat backward/extended foot controls is necessary 		✓	med	med	med
		80. Provide adequate leg clearance <ul style="list-style-type: none"> move personal items 	✓		low	med	med

Head/Eyes

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
23. Difficult to see/light levels too low/too high.	• Windshield is dirty or broken	18. Improve visual access to work • replace windshield if broken • clean windshield if dirty.	✓	✓	med low	med med	med med
	• Absence of sun visor	108. Provide protection from glare of natural light • provide sun visor for cab's interior	✓		low	med	med
24. Intensive visual tasks, staring at work objects for long periods	• Rarely occurs	N/A					